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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.								
10/825,689	04/16/2004	Suning Wang	2003-009-03US	8857								
7590 04/26/2007												
Carol Miernicki Steeg PARTEQ Innovations Room 1625, Biosciences Complex Queen's University at Kingston Kingston, ON K7L 3N6 CANADA		<table border="1"><tr><td colspan="2">EXAMINER</td></tr><tr><td colspan="2">YAMNITZKY, MARIE ROSE</td></tr><tr><td>ART UNIT</td><td>PAPER NUMBER</td></tr><tr><td>1774</td><td></td></tr></table>			EXAMINER		YAMNITZKY, MARIE ROSE		ART UNIT	PAPER NUMBER	1774	
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SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE									
3 MONTHS		04/26/2007	PAPER									

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/825,689

Applicant(s)

WANG ET AL.

Examiner

Marie R. Yamnitzky

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22, 24-31 and 45-51 is/are pending in the application.
- 4a) Of the above claim(s) 2,5,11-15,18,22 and 45-51 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16 is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6-10,17,19-21 and 24-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

1. This Office action is in response to applicant's amendment filed February 12, 2007, which amends claims 2, 3, 12, 13, 16 and 26-31 and cancels claims 23 and 32-44.

Claims 1-22, 24-31 and 45-51 are pending.

2. The objection to the drawings (specifically, figures 15A, 15B and 21) for reasons noted in the Office action mailed August 10, 2006 is overcome by the replacement sheets filed February 12, 2007.

The rejection of claims 26-31 under 35 U.S.C. 112, 2nd paragraph, as set forth in the Office action mailed August 10, 2006 is overcome by claim amendment.

The rejection of claims 2, 5, 12, 13 and 18 under 35 U.S.C. 102(b) as anticipated by JP 05-320634 as set forth in the August 10th action is overcome by claim amendment.

The rejection of claims 2, 5, 12 and 13 under 35 U.S.C. 102(b) as anticipated by Pang et al. (*Journal of Materials Chemistry* 2002, Vol. 12, pp. 206-212) as set forth in the August 10th action is overcome by claim amendment.

The rejection of claims 2, 5, 12 and 13 under 35 U.S.C. 102(b) as anticipated by Inoue et al. (US 5,635,308) as set forth in the August 10th action is overcome by claim amendment.

The rejection of claims 2, 3, 5-7, 12, 13, 16, 18-21 and 24-31 under 35 U.S.C. 102(e) as anticipated by Saito et al. (WO 2004/020388 A1) as set forth in the August 10th action is overcome by claim amendment. (The corresponding rejection of claim 17 is withdrawn. Claim 17 should not have been included in the rejection as it depends solely from claim 1, which was not included in the rejection.)

3. The claims remain subject to restriction and election of species requirements.

As the elected species for the compound, applicant previously elected compound (4) of general formula 1A. Compound (4) was within the scope of general formulae (1A), (1B) and (1C) as defined in original independent claims 1-3.

Independent claim 2 as amended February 12, 2007 no longer reads on the elected species. There is also no overlap between a compound having general formula (1B) as claimed in present claim 2 and a compound having general formula (1A) as claimed in claim 1. Accordingly, claim 2 and claims ultimately dependent solely (directly or indirectly) therefrom are withdrawn from consideration.

Independent claim 3 as amended February 12, 2007 also no longer reads on the elected species. However, there is overlap between a compound having general formula (1C) as claimed in present claim 3 and a compound having general formula (1A) as claimed in claim 1, and some prior art applied against claim 3 in the Office action mailed August 10, 2006 remains applicable for reasons stated later in this action. Accordingly, claim 3 remains under consideration.

4. Claims 2, 5, 12, 13 and 18 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election of species for the compound was made **without** traverse in the reply filed on May 26, 2006.

Claims 11, 14 and 15 stand withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking

claim. Applicant timely traversed the restriction requirement with respect to these claims in the reply filed on May 26, 2006.

Claims 22 and 45-51 stand withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the election of species requirement with respect to these claims in the reply filed on February 12, 2007. (During a telephone conversation with Carol Miernicki Steeg on July 19, 2006, the examiner agreed to consider the Group VII claims, subject to election of a specific device selected from those recited in the claims. During the telephone conversation, an electroluminescent device was elected as the species for the Group VII device. Claims 22 and 45-51 do not read on the elected species of device. In the reply filed on February 12, 2007, applicant affirmed the election and traversed the requirement on the basis that if a claimed compound is found to be novel, then all devices employing the compound must be novel. This argument is not persuasive as the claimed compounds have not been found to be novel. The election of species requirement with respect to the device of Group VII is still deemed to be proper and is therefore made FINAL. The examiner will reconsider the withdrawal of claims 22 and 45-51 upon allowance of a generic or linking claim. Note that claims 45-49, with claim 51 dependent from claim 48, presently depend solely from claims that have been cancelled. Without further amendment, there are no claims that will function as generic or linking claims for claims 45-49 and 51.

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5. While some prior art is applied against non-elected species, this action does not represent an examination on the merits of all species within the scope of the examined claims.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 3, 4, 6-10, 17, 19-21, 27 and 29-31 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 05-320634.

Claims 7, 20, 21, 27 and 29-31 are included in this rejection as dependent directly or indirectly from claim 1 or claim 3.

The prior art discloses dipyriddyamines within the scope of present claims 1, 3, 4 and 6-10. For example, see prior art claim 1 and paragraphs [0005]-[0009].

JP 05-320634 anticipates compounds of formula (1A) as defined in present claim 1 wherein each of X^5 , X^6 and X^7 represents nitrogen, and wherein either n is 0 and Z is biphenyl substituted with an amino group or n is 1 and Z is phenyl substituted with an amino group.

JP 05-320634 anticipates compounds of formula (1C) as defined in present claim 3 wherein each of Z^3 and Z^4 represents a substituted or unsubstituted pyridyl wherein the substituent is an aryl group, an alkoxy group or an aliphatic group, and wherein m is 0 and Z^2 is biphenyl substituted with an amino group.

The prior art dipyriddyamine compounds are disclosed for use as hole transport materials in organic electroluminescent (EL) elements (devices). A dipyriddyamine compound may be used in a hole transport layer that is separate from the luminescent layer of the device, or may be used in the luminescent layer of the device in combination with a luminescent material. The device may also comprise an electron transport layer. For example, see prior art claim 1 and paragraphs [0015]-[0024]. The device structures disclosed by the prior art anticipate a device as claimed in present claims 27 and 29-31. The prior art EL devices also meet the limitations of a product as claimed in claims 20 and 21. With respect to the product of claims 20 and 21, also see paragraph [0027].

The prior art dipyriddyamine compound may be mixed with a polymer and a layer may be formed by a solution coating method (which implies a solvent), thus anticipating a composition as claimed in present claims 17 and 19. For example, see paragraphs [0014] and [0018].

8. Claims 1, 3, 4, 6-10, 20, 21, 24, 25 and 29-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Pang et al. in *Journal of Materials Chemistry* 2002, Vol. 12, pp. 206-212 (published as an Advance Article on the Web on December 11, 2001).

Claims 7, 20, 21, 24, 25 and 29-31 are included in this rejection as dependent directly or indirectly from claim 1 or claim 3.

Pang et al. disclose three compounds within the scope of present general formulae (1A) and (1C), and teach their use in an organic EL device. See the whole article. In particular see

formulae 1, 2 and 4 on page 207, Table 2 on p. 208, Fig. 4 and Fig. 5 on p. 209, the paragraph bridging pp. 209-210, the first two full paragraphs on p. 210, and the last paragraph on p. 211.

Compound 1 of the prior art meets the limitations of a compound as defined in present claim 1 wherein each of X^5 , X^6 and X^7 represents nitrogen, n is 0 and Z is phenyl substituted with amino groups. Compound 1 also meets the limitations of a compound as defined in present claim 3 wherein each of Z^3 and Z^4 represents a pyridyl group, m is 0 and Z^2 is phenyl substituted with amino groups. Compound 1 further meets the limitations of the compound defined in present claims 4 and 6-10.

Compound 2 of the prior art meets the limitations of a compound as defined in present claim 1 wherein each of X^5 , X^6 and X^7 represents nitrogen, and wherein either n is 0 and Z is biphenyl substituted with aryl groups or n is 1 and Z is phenyl substituted with an aryl group. Compound 2 also meets the limitations of a compound as defined in present claim 3 wherein each of Z^3 and Z^4 represents a pyridyl group, m is 0 and Z^2 is biphenyl substituted with aryl groups. Compound 2 further meets the limitations of the compound defined in present claims 4 and 6-10.

Compound 4 of the prior art meets the limitations of a compound as defined in present claim 1 wherein each of X^5 , X^6 and X^7 represents nitrogen, n is 0 and Z is phenyl substituted with an aryl group. Compound 4 also meets the limitations of a compound as defined in present claim 3 wherein each of Z^3 and Z^4 represents a pyridyl group, m is 0 and Z^2 is phenyl substituted with an aryl group. Compound 4 further meets the limitations of the compound defined in present claims 4 and 6-10.

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9. Claims 1, 3, 4, 6-9, 20, 21 and 24-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Inoue et al. (US 5,635,308).

Claims 7, 20, 21 and 24-31 are included in this rejection as dependent directly or indirectly from claim 1 or claim 3.

Inoue et al. disclose various compounds within the scope of one or more of present general formulae (1A) and (1C), and teach their use in an organic EL device.

For example, compounds I-7, II-7 and similar compounds are compounds of present formula (1A) wherein X^7 represents nitrogen, each of X^5 and X^6 represents carbon, and wherein either n is 0 and Z is phenyl substituted with an aryl group or n is 1 and Z is anthryl substituted with an aryl group. See columns 7-10 for the structure of compounds I-7 and II-7. These compounds further meet the limitations of a compound having general formula (1C) as defined in claim 3, and the limitations of claims 4 and 6-9.

Inoue et al. teach various layered structures for an EL device, and teach that the compounds may be used in the light emitting layer, hole-injecting/transporting layer or electron-injecting/transporting layer of an EL device. For example, see column 29, line 52-c. 30, l. 49.

10. Applicant's arguments filed February 12, 2007 have been fully considered but they are not persuasive.

The examiner respectfully disagrees with applicant's argument that the examiner is using the term "substituent" in a manner that is not consistent with the art. With respect to applicant's example of a compound of the formula A-C-B, and applicant's argument that it is not correct to

refer to the bridging moiety C in a molecule of the formula A-C-B as a substituent of B, the examiner agrees that C, per se, is not a substituent of B, but in a compound of the formula A-C-B, the moiety -C-A can be considered to be a substituent of B, or the moiety -C-B can be considered to be a substituent of A, or the moieties -A and -B can be considered to be substituents of C, or the moiety -A can be considered to be a substituent of C-B, or the moiety -B can be considered to be a substituent of C-A.

With respect to applicant's argument that the present invention claims molecules with non-symmetric core moieties, the examiner notes that the pending claims under consideration with the exception of claim 16, which is limited to four specific compounds, are silent with respect to symmetry or non-symmetry and do not use the term "core". To the extent that applicant's arguments may imply that the substituents specified in claims 1 and 3 are not further substituted, the examiner notes that the claim language does not exclude further substitution. For example, the phrase "an amino group" as recited in claims 1 and 3 is interpreted by the examiner as encompassing substituted and unsubstituted amino groups.

Applicant argues that in present structure (1A), a Z moiety is always directly bonded to a phenyl-2,2'-dipyridylamine moiety and therefore all compounds of present formula (1A) necessarily have a non-symmetric core. The examiner notes that because n is defined in claim 1 as a number from 0-2, the Z moiety may be directly bonded to a 2,2'-dipyridylamine moiety, a phenyl-2,2'-dipyridylamine moiety, or a biphenyl-2,2'-dipyridylamine moiety. Likewise, since m is defined in claim 3 as a number from 0-10, the Z² moiety may be directly bonded to the nitrogen shown in formula (1C), or may be indirectly bonded through 1-10 substituted phenylene

groups. The Z/Z^2 moiety of formula (1A)/(1C) may be phenyl or biphenyl, and may be further substituted.

Applicant's arguments regarding the distinctions between the compounds of present claims 1 and 3 and the compounds of JP 05-320634 are not understood. Applicant argues that the examiner has taken a moiety as described as a substituent of Z and inserted it between Z and the phenyl-2,2'-dipyridylamine moiety for claim 1, and taken a moiety as described as a substituent of Z^2 and inserted it between Z^2 and the phenyl moiety of formula (1C) for claim 3. It is not clear from applicant's arguments which moiety described as a substituent of Z/Z^2 has been inserted by the examiner between Z/Z^2 and the phenyl(ene) of formula (1A)/(1C). Also note that since n may be 0, and m may be 0, the phenyl(ene) group shown in formula (1A)/(1C) need not be present. Giving claims 1 and 3 their broadest reasonable interpretation, JP 05-320634 meets the claim limitations for the reasons noted in the rejection.

With respect to applicant's arguments regarding compound 1 of Pang et al. versus present claims 1 and 3, applicant's arguments imply that a dipyridylamino group is outside the scope of "an amino group" as recited in present claims 1 and 3, and a dipyridylaminophenyl moiety is outside the scope of an aryl group. Absent positive recitation of "an unsubstituted amino group" and "an unsubstituted aryl group", the examiner interprets the present claim language as encompassing substituted or unsubstituted amino groups, and substituted or unsubstituted aryl groups. Similar arguments are made with respect to the other compounds of Pang et al. that are referenced by the examiner, and the arguments are not persuasive for similar reasons. Based on

applicant's arguments, applicant is construing the claims more narrowly than interpreted by the examiner. The examiner gives the present claims their broadest reasonable interpretation.

With respect to applicant's arguments regarding the patent to Inoue et al. and the terms "substituent" and "aryl", the term "substituent" places no positive limitation on the size of the moiety, and the term "aryl" is interpreted as encompassing substituted and unsubstituted aryl groups (with no limitation on the substituent(s) of a substituted aryl group).

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. This application contains claims drawn to inventions and/or species nonelected with traverse. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144). See MPEP § 821.01.

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13. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 7:00 a.m. to 3:30 p.m. Monday-Friday.

The current fax number for all official faxes is (571) 273-8300. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY
April 23, 2007



MARIE YAMNITZKY
PRIMARY EXAMINER

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